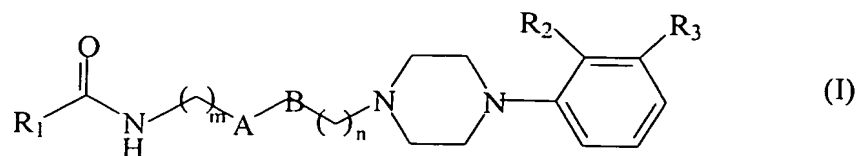


We claim:

1. A compound having the formula



wherein

A is cis or trans $-\text{CH}=\text{CH}-$, $-\text{C}\equiv\text{C}-$, or cyclohexyl;

B is cis or trans $-\text{CH}=\text{CH}-$ or absent;

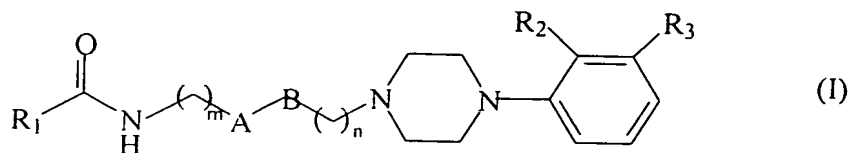
R_1 represents an aromatic substituent which may contain a heteroatom and is a single ring or multiple rings that are linked covalently, or that are linked to a common group, wherein R_1 is optionally substituted on one or more rings, wherein said substituents are selected from the group consisting of: hydrogen, halogen, amino, nitro, hydroxyl, alkoxy, alkyl, acyl and pyridyl, and said substitution may occur at any of the ortho, meta, or para positions;

R_2 and R_3 may be independently hydrogen or a halogen, or R_2 alone may be C_1 , C_2 , or C_3 alkoxy;

m is 1 or 2; and

n is 0, 1, or 2.

2. A compound having the formula



wherein

A is cis or trans -CH=CH-, -C≡C-, or cyclohexyl;

B is cis or trans -CH=CH- or absent;

R₁ represents an optionally substituted phenyl group, wherein said substituents are selected from the group consisting of: hydrogen, halogen, amino, nitro, hydroxyl, alkoxy, alkyl, acyl and pyridyl, and said substitution may occur at any of the ortho, meta, or para positions, or R₁ represents a heteroaryl group, with the exception that R₁ is not triazole or thiadiazole or benzisoxazole or benzothiazole;

R₂ and R₃ may be independently hydrogen or a halogen, or R₂ alone may be C₁, C₂, or C₃ alkoxy;

m is 1 or 2; and

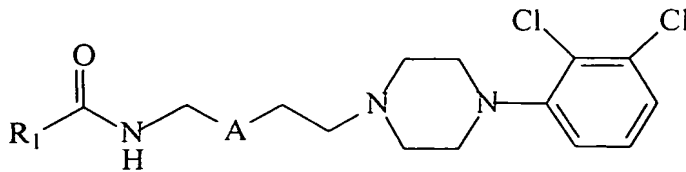
n is 0, 1, or 2.

3. The compound of claim 1, wherein B is absent, R₂ and R₃ are both halogen, m is 1 and n is 1.

4. The compound of claim 1, wherein B is absent, R₂ is lower alkoxy, R₃ is H, m is 1 and n is 1.

5. The compound of claim 1, wherein R₁ is phenyl substituted by a halogen, an amino group, a nitro group, a methoxy group, or pyridyl group.

6. A compound having the formula:



wherein

A is cis or trans -CH=CH-, -C≡C-, or cyclohexyl; and

R₁ represents an optionally substituted phenyl group, wherein said substituents are selected from the group consisting of: hydrogen, halogen, amino, nitro, hydroxyl, alkoxy, alkyl, acyl and pyridyl, and said substitution may occur at any of the ortho, meta, or para positions, or R₁ represents a heteroaromatic ring, with the exception that R₁ is not triazole or thiadiazole.

7. A method of treating cocaine abuse in a subject, comprising the steps of:

administering to the subject an amount of a compound of claim 1 effective to inhibit binding of dopamine to a dopamine D3 receptor in the brain of said subject.

8. A method for selectively imaging dopamine D3 receptor in the central nervous system of a subject, comprising:

(a) administering a radioactively labeled compound of claim 1 to the subject; and

(b) detecting the binding of that compound to dopamine D3 receptors in the central nervous system of the subject.

9. A method for detecting or monitoring a disease resulting from abnormal distribution and/or density of dopamine D3 receptor in the central nervous system of a subject, comprising:

(a) administering to the subject a detectably labeled compound of claim 1;

(b) detecting the binding of that compound to dopamine D3 receptor in the central nervous system tissue;

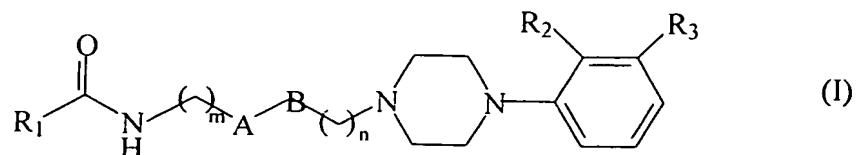
(c) determining the distribution and/or density of the dopamine D3 receptor in the central nervous system tissue;

(d) comparing the distribution and/or density obtained in (c) with the distribution and/or density of dopamine D3 receptor in a corresponding normal tissue; and

(e) diagnosing a disease state by a difference in the distribution and/or density between the normal tissue and the subject tissue.

10. The method of claim 8 or 9, wherein the central nervous system tissue is brain tissue.

11. A compound having the formula



wherein

A is cis or trans $-\text{CH}=\text{CH}-$, $-\text{C}\equiv\text{C}-$, or cyclohexyl;

B is cis or trans $-\text{CH}=\text{CH}-$ or absent;

R_1 represents an aromatic substituent which may contain a heteroatom and is a single ring or multiple rings that are fused rings or are linked covalently, or that are linked to a common group, wherein R_1 is optionally substituted on one or more rings, wherein said substituents are selected from the group consisting of: hydrogen, halogen, amino, nitro, hydroxyl, alkoxy, alkyl, acyl and pyridyl, and said substitution may occur at any of the ortho, meta, or para positions, with the exception that R_1 is not triazole or thiadiazole or benzisoxazole or benzothiazole;

R_2 and R_3 may be independently hydrogen or a halogen, or R_2 alone may be C_1 , C_2 , or C_3 alkoxy;

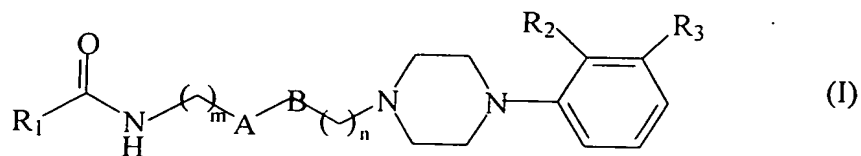
m is 1 or 2; and

n is 0, 1, or 2.

12. The compound of claim 11, in which A is cyclohexyl.

13. A method of treating cocaine abuse in a subject, comprising the steps of:

administering to the subject an amount of a compound having the formula



wherein

A is cis or trans $-\text{CH}=\text{CH}-$, $-\text{C}\equiv\text{C}-$, or cyclohexyl;

B is cis or trans $-\text{CH}=\text{CH}-$ or absent;

R_1 represents an aromatic substituent which may contain a heteroatom and is a single ring or multiple rings that are fused rings or are linked covalently, or that are linked to a common group, wherein R_1 is optionally substituted on one or more rings, wherein said substituents are selected from the group consisting of: hydrogen, halogen, amino, nitro, hydroxyl, alkoxy, alkyl, acyl and pyridyl, and said substitution may occur at any of the ortho, meta, or para positions;

R_2 and R_3 may be independently hydrogen or a halogen, or R_2 alone may be C_1 , C_2 , or C_3 alkoxy;

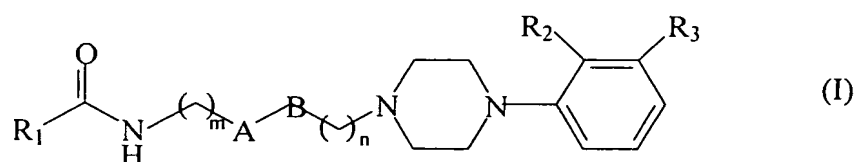
m is 1 or 2; and

n is 0, 1, or 2;

effective to inhibit binding of dopamine to a dopamine D_3 receptor in the brain of said subject.

14. A method for selectively imaging dopamine D3 receptor in the central nervous system of a subject, comprising:

(a) administering a radioactively labeled compound having the formula



wherein

A is cis or trans $-\text{CH}=\text{CH}-$, $-\text{C}\equiv\text{C}-$, or cyclohexyl;

B is cis or trans $-\text{CH}=\text{CH}-$ or absent;

R_1 represents an aromatic substituent which may contain a heteroatom and is a single ring or multiple rings that are fused rings or are linked covalently, or that are linked to a common group, wherein R_1 is optionally substituted on one or more rings, wherein said substituents are selected from the group consisting of: hydrogen, halogen, amino, nitro, hydroxyl, alkoxy, alkyl, acyl and pyridyl, and said substitution may occur at any of the ortho, meta, or para positions;

R_2 and R_3 may be independently hydrogen or a halogen, or R_2 alone may be C_1 , C_2 , or C_3 alkoxy;

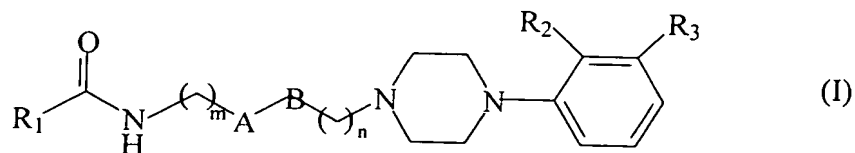
m is 1 or 2; and

n is 0, 1, or 2; to the subject; and

(b) detecting the binding of that compound to dopamine D3 receptors in the central nervous system of the subject.

15. A method for detecting or monitoring a disease resulting from abnormal distribution and/or density of dopamine D3 receptor in the central nervous system of a subject, comprising:

(a) administering to the subject a detectably labeled compound having the formula



wherein

A is cis or trans $-\text{CH}=\text{CH}-$, $-\text{C}\equiv\text{C}-$, or cyclohexyl;

B is cis or trans $-\text{CH}=\text{CH}-$ or absent;

R_1 represents an aromatic substituent which may contain a heteroatom and is a single ring or multiple rings that are fused rings or are linked covalently, or that are linked to a common group, wherein R_1 is optionally substituted on one or more rings, wherein said substituents are selected from the group consisting of: hydrogen, halogen, amino, nitro, hydroxyl, alkoxy, alkyl, acyl and pyridyl, and said substitution may occur at any of the ortho, meta, or para positions;

R_2 and R_3 may be independently hydrogen or a halogen, or R_2

alone may be C₁, C₂, or C₃ alkoxy;

m is 1 or 2; and

n is 0, 1, or 2;

(b) detecting the binding of that compound to dopamine D3 receptor in the central nervous system tissue;

(c) determining the distribution and/or density of the dopamine D3 receptor in the central nervous system tissue;

(d) comparing the distribution and/or density obtained in (c) with the distribution and/or density of dopamine D3 receptor in a corresponding normal tissue; and

(e) diagnosing a disease state by a difference in the distribution and/or density between the normal tissue and the subject tissue.

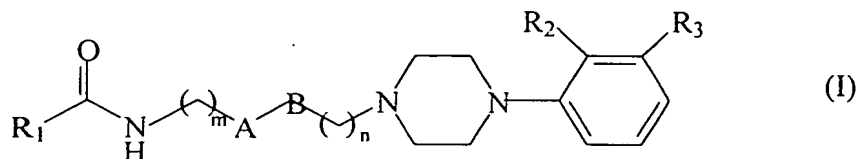
16. The method of claim 14 or 15, wherein the central nervous system tissue is brain tissue.

17. Use of a compound of claim 11 for imaging of D3 dopamine receptor in a subject or in a tissue sample.

18. Use of a compound of claim 11 for detecting or monitoring a disease resulting from abnormal distribution and/or density of dopamine D3 receptor in the central nervous system.

19. Use of a compound of claim 11 for formulating a medicament for the treatment of cocaine abuse.

20. A compound having the formula



wherein

A is cyclohexyl;

B is cis or trans -CH=CH- or absent;

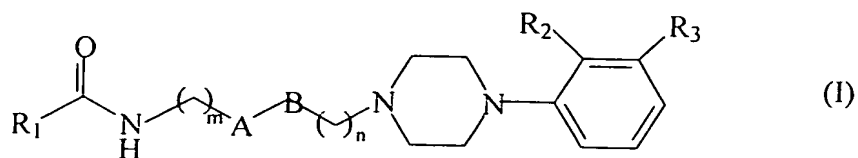
R₁ represents an aromatic substituent which may contain a heteroatom and is a single ring or multiple rings that are fused rings or are linked covalently, or that are linked to a common group, wherein R₁ is optionally substituted on one or more rings, wherein said substituents are selected from the group consisting of: hydrogen, halogen, amino, nitro, hydroxyl, alkoxy, alkyl, acyl and pyridyl, and said substitution may occur at any of the ortho, meta, or para positions;

R₂ and R₃ may be independently hydrogen or a halogen, or R₂ alone may be C₁, C₂, or C₃ alkoxy;

m is 1 or 2; and

n is 0, 1, or 2.

21. A compound having the formula



wherein

A is cis or trans -CH=CH-, -C≡C-, or cyclohexyl;

B is cis or trans -CH=CH- or absent;

R₁ represents an aromatic substituent which may contain a heteroatom and is a single ring or multiple rings that are linked covalently, or that are linked to a common group, or is a group of three fused rings, wherein R₁ is optionally substituted on one or more rings, wherein said substituents are selected from the group consisting of: hydrogen, halogen, amino, nitro, hydroxyl, alkoxy, alkyl, acyl and pyridyl, and said substitution may occur at any of the ortho, meta, or para positions;

R₂ and R₃ may be independently hydrogen or a halogen, or R₂ alone may be C₁, C₂, or C₃ alkoxy;

m is 1 or 2; and

n is 0, 1, or 2.